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DISEASES OF THE NERVOUS SYSTEM

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

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CONTENTS:

PSYCHIATRY IN PEDIATRIC PRACTICE (Page 101)
Leo Kanner, M.D., Baltimore, Maryland

VITAMIN THERAPY IN DISEASES OF THE NERVOUS SYSTEM (Page 104)
I. S. Wechsler, M.D., New York, New York

ACROPARESTHESIA—NUMBNESS OF THE EXTREMITIES (Page 108)
Robert W. Brown, M.D., Ft. Steilacoom, Washington
Frederick P. Moersch, M.D., Rochester, Minnesota

THE TREATMENT OF NEUROSYPHILIS IN A PSYCHIATRIC CLINIC (Page 113)
Eugene Davidoff, M.D., Syracuse, New York
Carl A. Whitaker, M.D., Canandaigua, New York

PREVENTION OF RECURRENCES IN MANIC-DEPRESSIVE PSYCHOSIS (Page 121)
Clifford W. Mack, M.D., Livermore, California

EDITORIAL, NEWSNOTES, AND SANITARIA

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DISEASES of the NERVOUS SYSTEM

(PUBLISHED MONTHLY)

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EDITORIAL COMMENT

Neurological Surgery

Neurosurgery as a specialty in the United States traces its origin to the Civil War. Dr. S. Weir Mitchell and Dr. William W. Keen, of Philadelphia, presented their experiences as Army Surgeons at the Turner's Lane Hospital in Philadelphia with Dr. George R. Moorehouse in a surgical work entitled, "Gunshot Wounds and Other Injuries of Nerves," published in 1864.

Dr. Keen, later Professor of Surgery at Jefferson College, was a brilliant operator. He undertook the pioneer work of surgery on the head, spinal cord and nerves. Encouraged by the careful neurological and localization studies carried out by Dr. Charles K. Mills and with the encouragement of Dr. S. Weir Mitchell, Dr. Keen succeeded in removing brain tumors, operating on the trigeminal nerve and gasserian ganglion and followed the precedent of Sir Victor Horsley in London (who with Gowers in 1888 removed the first spinal cord tumor). By 1890, the Philadelphia School had aroused great interest in this new field and the names of Spiller, De Schweinitz, Dercum, Lloyd and Potts are linked with neurological support of this most dangerous and difficult field of surgery. As Dr. Keen began to attack such problems as microcephalic contraction of the skull, introducing "linear craniotomy" as well as improving under the technic in use by the Continental surgeons, two young general surgeons in America turned their interest to this new specialty.

Dr. Harvey Cushing enlarged his studies in physiology and surgery to include the cerebrospinal fluid system as well as many of the related problems of intra-cranial pressure. His contributions while Professor of Surgery at Johns Hopkins from 1902 to 1911 were startling and fundamental. Methods of treatment for hydrocephalus, sub-temporal decompression, methods of localization and approach to brain tumors and particularly a deep interest in the physiology, pathology and operative relief for the pituitary body followed rapidly from a brilliant and prolific pen. This was a pioneer period so that many operative procedures and specialized instruments bear his name today and the present specialty owes its stability and foundation to his genius.

In Philadelphia, Dr. Charles H. Frazier as a young general surgeon with great technical skill and ability was induced about the same time by Dr. Mills and Dr. Spiller to take up the difficult task of neurosurgical intervention in the patients upon whom long hours had been spent establishing a localization of lesions in the brain or spinal cord.

Dr. Mills developed an especial interest in "localization" and was responsible for many of the accurate clinical methods now used to establish the presence of a brain tumor or a cord lesion. I have heard Dr. Frazier say more than once, he would have abandoned these early difficult assignments excepting for the fact that Dr. Mills and Dr. Spiller, as well as Dr. Dercum, cheered him on and continued to send him cases, realizing that success would eventually follow. As a result, to Dr. Frazier we are indebted in this specialty for many refinements in technic and in skill, for instrumental development and for management of the patient before, during and after operation which are generally accepted methods of procedure in almost every Neurosurgical Clinic today. It was Dr. Frazier who made possible the technical advantage of cutting the roots of the trigeminal nerve as advocated by Spiller. Up to this time, trigeminal operations were performed upon the ganglion which was "avulsed." The operation hac

earned the just title of being, "difficult, dangerous and bloody." With the improvement in technic and the section of the root instead of disturbance of the ganglion, the operation became a safe, technically perfect procedure. It is no wonder that Dr. Frazier was proud of the fact that he had reduced the mortality of this operation from more than 20 per cent down to less than 1 per cent. Dr. Frazier also perfected the details of "chordotomy" or section of the antero-lateral columns of the spinal cord for relief of pain. Dr. Spiller first suggested the section of these fibers to relieve intractable pain and prevailed upon Dr. Edward Martin to carry out this procedure in the first case at the Philadelphia General Hospital in 1912. Dr. Frazier, however, developed the technical skill and instrumentation for this method which has brought so much relief from intractable pain and the method is now known as the Spiller-Frazier operation.

By 1912, Dr. Cushing had become famous in this field of neurosurgery and had accepted the Professorship at Harvard University in Boston. Dr. Frazier continued his work at the University of Pennsylvania. There appeared a rapidly growing interest in this particular field. Dr. Charles Elsberg of New York became particularly interested in spinal cord tumors.

In 1910, Dr. Ernest Sachs, who was deeply interested in Neurology, had just returned from abroad after having spent two years with Sir Victor Horsley at the National Hospital and University College of London. He had amplified his training further in Berlin and in Vienna, where he served under Marberg. He was the first of those who were to "train" themselves especially and entirely for the Neurosurgical field. In 1911, he began to do Neurosurgery at the Washington University School of Medicine in St. Louis. In 1919 he was made Professor of Neurological Surgery, thus holding the first Professorial chair in Neurological Surgery created in this country or abroad.

The men trained by Cushing, Frazier, Elsberg and Sachs did not all elect to become Neurosurgeons. The majority, however, rapidly gained prominence for themselves and are to be recognized as the leading Neurosurgeons in the country today.

Neurosurgery, however, had not maintained or reached a state of highly organized specialty until the advent of the United States into the World War. It became evident that wounds and injuries of the brain, cord and nerves required special attention. It had already become established that the Neurosurgeons required more detailed training than the general surgeon for the management of certain brain and cord conditions. The time required for operation, the many technical details and special instrumentation gradually established the fact that those prepared and equipped to do Neurosurgery should be assigned the material. This was generally recognized by the War Department but not until the experience had been a bitter one as far as the proper and adequate management of such lesions was concerned. Under Dr. Cushing's lead abroad, organization was rapidly brought into the Medical Corps and specialized units to take care of neurosurgical problems were assigned. On this side, Dr. Frazier maintained a base hospital unit for neurosurgical reconstructive and repair problems.

Out of the War emerged not only a group of neurosurgically trained men, but the recognition for the need of a specialty in Neurosurgery was established.

With the foundation of the American Society of Neurological Surgeons, and the intense activity that began in the various clinics following the War, particularly under the leadership of Dr. Cushing and Dr. Frazier, many of our most important physiological observations have been given to us. The use of air for the purpose of x-ray visualization of obscure lesions of the brain and cord was first undertaken by Dr. Dandy. The important work of Weed and his associates on cerebrospinal fluid physiology in 1918 brought forth and stimulated a host of observations which have been of benefit to the entire profession. The findings of Dale and Richard presented to the British Shock Commission in 1918 and 1919 offered a better clinical means for combating traumatic and surgical shock.

It is obvious that with the increase in knowledge relative to control of intra-cranial pressure through the physiology of the cerebro-spinal fluid system, and the adequate control and correction of surgical and trau-

(Continued to Page 126)

Psychiatry in Pediatric Practice

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Dr. Kanner is Associate Professor of Psychiatry of the Johns Hopkins Medical School and Director of the Children's Psychiatric Service of the Harriet Lane Home, Johns Hopkins Hospital, which he organized and has conducted since 1930. Dr. Kanner has written approximately one hundred publications pertaining to internal medicine, psychology, psychiatry, child guidance, and medical history and folklore. He is the author of three books: "Folklore of the Teeth," 1928; "Judging Emotions from Facial Expressions," 1931; and "Child Psychiatry," 1935.

It has been estimated that from 50 to 70 per cent of the children brought to pediatricians present problems of behavior. Parents come for advice regarding the routine habits of their offspring, real or seeming delay in their development, display of fear, jealousy or anger, questions of emancipation and conformity, tics, other manifestations commonly referred to as signs of "nervousness", and worry about the children's poor progress and conduct at school. Experienced physicians know that mere attention to the body does not suffice to determine the directions of help and guidance.

One of the first concerns of the Children's Psychiatric Service, instituted nine years ago at the Harriet Lane Home, the Pedriatic Department of the Johns Hopkins Hospital, was curiosity about the type of problems which come before the pediatricians most commonly. The following list of the leading complaints of about 1,000 children referred there, may give an idea of the variety and frequency of problems which the members of the staff considered as needing psychiatric advice:

Poor Progress in School	315
Enuresis	256
Food Capriciousness	222
Temper Tantrums	217
Nailbiting	163
Restlessness	154
Fear Reactions	153
Epilepsy	142
Spoiled Child Reactions	126
Speech Difficulties	124
Tics	75
Hypochondriasis	72
Headaches	68
Sleep Disturbance	65
Sex Problems	63
Psychogenic Vomiting	54
Thumbsucking	36
Crying Spells	34
Stealing	29
Encopresis	26
Constipation	24
Disobedience	22
Breathholding Spells	22
Destructiveness	21
Lying	21

How does psychiatry help in the treatment of such problems? What does it do and teach? It deals with the thinking, feeling and acting person and his normal and abnormal functioning or behavior. The psychiatrist does not disregard the fact that the object of his inquiry has a brain, a heart, lungs, a stomach and intestines, kidneys and glands of internal secretion. He does not forget that the mode of functioning of these parts is of importance to the functioning of the whole. The better his medical background is, the better is he qualified for his psychiatric work. Lay psychiatry, so-called, would not flourish so well, if parents could be made to feel physicians were willing and able to add the consideration of the child to that of his organs, weight and basal metabolic rate.

The psychiatrically informed physician studies and treats every patient as a specific individual, as John Miller, Jane Johnson, or whoever he or she may be. John or Jane is brought to the doctor with a complaint and with the expectation that he or she will be helped. How do we proceed? Do we immediately fall back on our own imagination, or somebody else's imagination, and correlate any type of complaint about any child with a preconceived, ready-made formula? This would be equivalent to arriving at a conclusion before the beginning of the examination. Psychiatry is a science, and as such it centers its curiosity on facts, obtains the facts at play in the individual case and deals with the obtained facts in the therapeutic planning.

Facts are not only stranger than fiction; they also have dramatic values. Inquiry into the facts reveals in every instance a dynamic story full of human interest, a drama in which

the physician is called upon to act as a constructive stage manager. His management requires knowledge of the plot, experience as a manager, resourcefulness and ability to understand the parts and handle the actors.

The story begins with the complaint. The complaint does not always tell us what is really wrong with the child, but it always tells us what it is that disturbs the parents. If we give them a chance to express themselves, we get an account of the problem itself and of their attitudes with regard to the problem and to the child who presents the problem. We are led into the midst of the family life with prevailing standards, fears, hopes, ambitions, methods of child management, and emotional habits. We obtain information about the onset and development of the difficulty. In dealing with scarlet fever, we are interested in the possible source of infection, incubation period, first symptoms, and the complications which may arise. It is fair to expect that the same general rules should be made to apply to tics, night terrors, or stealing.

Having acquainted ourselves with the problem, our inquiry is directed towards the principal figure, the patient. The first step in the study of any person is a knowledge his biography. We begin with the beginning. Was he a wanted or unwanted child? Were there any incidents during pregnancy influencing later parental attitudes? We learn about the details of his birth, health and feeding in infancy, the data of motor, linguistic and habit development, the history of specific illnesses, operations and injuries, and his school achievements or failures. We learn to what extent socialization and emancipation have taken place, what the patient's habits of eating, sleeping, and elimination, work and play activities, interests and inclinations, and general disposition are.

At this time, we know the complaint and have a general idea about the patient as seen by the informant. We proceed to learn something about the other dramatic persons, the members of the family. We are interested in the emotional and educational relationship existing between them and our patient.

The next step takes us into the scenery in which the play is laid, the child's environment. The complaint, biography and family background have already furnished a number of orienting facts. To these we add the family's economic conditions, cultural needs and their gratification, the neighborhood in which they live, the relationship of the family members to each other and the type of home which they occupy.

The plot has now been sufficiently developed to allow us to go into a more detailed analysis of the child's personality. We have so far listened to informants, while the patient himself has been playing, crying or sitting listlessly in the waiting room. Now we are ready to examine him. He is given the same opportunity for privacy and a confidential interview as an adult patient. We are interested in his physical condition, intellectual endowment, emotional habits, attitudes toward his parents, siblings, teachers and doctors, and his own feeling of difficulty and need for help.

The significance of a complete physical examination need not be emphasized in a medical journal. We are less interested in the academic question as to whether a problem is "functional" or "organic" than in the concrete findings of our examination. We cannot, as physicians, afford to overlook existing malnutrition, refractive error, dental caries, inguinal hernia or a draining ear. These things call for recognition and attention, whether or not they have anything to do with the psychiatric problem under consideration.

The physical examination is followed by psychometric investigation. For this, reliable tests are available and can be learned. Their haphazard application is dangerous and may result in grave errors. The intelligence test is of greater importance than most physicians believe it to be, yet not as important as many laymen believe it to be. It is one of several items in our inquiry. It tells us whether or not a child is well adjusted at school, so far as his intellectual ability is concerned. The result of the test must be evaluated from the point of view of effort, work habits, stability, ambition, interest, emotional attitudes and environmental conditions. There is nothing absolute about the I.Q., just as there is nothing absolute about the B.M.R., the sugar tolerance curve, or anything else in life.

The patient's emotional assets and difficul-

ties are also accessible to objective investigation which, though not permitting of standardization, can be carried out with equal objectiveness. They are measured by a record of the child's performances, the manner in which he gives vent to fear, anger, jealousy, ostentation, the manner in which he meets situations of real or assumed danger, disappointment, praise and criticism. The articulate child, once confidence has been established, is allowed to express himself freely, not as if he were a defendant facing a cross-examiner, but as a human being who tells, in his own language, of his big and little joys and worries and grievances. We have listened to the parent's complaints, excuses, and sometimes accusations. We now listen encouragingly to the child's "side of the story" without, of course, making him feel that sides are being taken by ourselves or anyone else. In this interview, the important thing is not what we as physicians tell the child, but what the child as a patient tells us.

By this time, we know what bothers the complainants. We know what bothers the child. We are acquainted with his biographic, somatic, intellectual, constitutional, emotional and environmental background. We are ready to diagnose the child's condition. The diagnosis is a reformulation of the complaint in the light of our findings obtained during the examination. We are under no obligations to indulge in Greek or Latin terminology. If, being acquainted with the facts, some people cannot get along without diagnostic slogans, there is no reason why they should not satisfy their inclinations. But it is wise to keep those slogans to ourselves; it is often harmful to send a mother home with the feeling that she has a neuropathic or neurotic child, or one inhabited by a complex. It is wiser to speak to the parent in her own language and to the child in his own language, pointing out the existing difficulties, without the use of diagnostic swear words, in a manner which makes them realize the logical wisdom of the therapeutic recommendations.

There are no rigid rules available for the treatment of children's behavior problems. The procedure depends upon the recognition of what is wrong and calls for amelioration in the individual case. This may sound vague at first hearing. But if you ask any gastroenterologist what he would recommend in the treatment of gastroenterological disorders, you will find nothing wrong nor vague in his statement that the therapeutic plan depends on the exact type and specific features of the disorder to be treated.

Knowing the patient's difficulties and the setting in which they have developed, the physician becomes creative in the production of a new act in which the child, the family and the environment are made to participate in a solution of the problem. As to the child, we take care of his physical shortcomings, gain his confidence, give him greater self-assurance, point out to him the steps which we wish to take and the manner in which he may cooperate. The shy, intimidated child will be treated differently than the youngster who has been the terror of the household; the daydreamer, differently than the bully. But all should feel that we are here to help them and not to join the chorus of those who have for years nagged, punished, preached, given in. We arrange a better school adjustment for the gifted or retarded pupil whom we find to be misplaced in his grade, for the child who is in need of special training, the child with specific reading disability, the one with defective vision, hearing or motility. We arrange for many children to return and work their problem out with us until it has cleared up.

As to the parents, we make them understand the problem and advise its solution in a manner which they can see is based on the facts obtained and logically acceptable. It does not do to dwell on generalities, such as the advice that the child no longer should be spoiled, nagged, contrasted with his siblings. Specific recommendations covering the 24 hours of the day are given. Sometimes the parents, even though seeing the point intellectually, have their own emotional difficulties to overcome before they are ready to cooperate whole-heartedly. This is often made easier for them by giving them an opportunity to ventilate their own troubles.

As to the environment, every physician knows that he depends on the available community facilities. He could do little without the aid of drug stores, hospitals, ambulances, and laboratories. In the treatment of children's personality problems, he must add the

knowledge of the facilities offered by the child-caring agencies, schools, nurseries, organized welfare groups, recreational centers, and child guidance clinics. It is, at times, necessary to remove a child for a shorter or longer period from a home where improvement cannot be expected. This realization must be followed by the selection of an adequate substitute for the home, so that a repetition of the old difficulties, or the creation of new ones, is avoided.

One may get the impression, which indeed is current among many physicians, that the outlined procedure must be time-consuming, far beyond the scope of a private practitioner. It takes undoubtedly a longer time than the routine physical examination of the child. But our own experience has taught us that, save in exceptional cases, it does not take the psychiatrically informed physician more than about one hour and a half to do a satisfactory preliminary examination. After all, no one complains about the time it takes for a G.I. series or the reading of a blood sugar curve. Most parents will be only too glad to recompense the physician for his time when they have reason to feel that the time is needed and that the physician makes competent use of that time.

Vitamin Therapy in Diseases of the Nervous System

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The treatment of nervous diseases with various vitamins has assumed increasing importance in recent years. Some of this is based on solid knowledge and represents an accurate correlation of experimental investigation with clinical observation; much of it is the result of exuberant speculation, of hopeful thinking, or of grasping at straws when confronted with conditions which resist other forms of therapy. We are going through an era of "gun-shot" vitamin prescribing which reminds one of the early period of endocrinology, when hit or miss endocrine polypharmacy was the order of the day. Much of this, of course, is due to want of precise information, but sufficient accurate knowledge has accumulated to permit, at least in some reasonable measure, the sifting of facts from fancy.

Although the fact that beriberi and pellagra with their neurological manifestations are deficiency diseases has been known for a long time, the knowledge that peripheral neuritis or peripheral neuropathy, as is more accurate, is very often the result of specific vitamin B privation is comparatively recent. In 1928 Shattuck and in 1929 Minot made the theoretical suggestion, without case reports, that some obscure peripheral neuritides bore resemblance to beriberi and, therefore, might be due to vitamin deficiency.

In 1930 the writer published a series of clinical cases with peripheral nerve involvement, showing that gastro-intestinal derangement and vitamin privation were contributory causes and that vitamin B therapy led to cures in some cases. In a subsequent paper (1932) clinical studies led to the conclusion that food privation and, therefore, avitaminosis and not the alcohol was the cause of alcoholic polyneuritis, that vitamin privation plays a role in diabetic, cachexia, pregnancy, arsenic and many other forms of neuritis. This was subsequently confirmed (1933) by Minot, Strauss and Cobb. Later Minot and Strauss made a crucial clinical experiment in which they demonstrated that alcoholics with polyneuritis permitted to take alcohol, but given large quantities of vitamins, recovered, whereas another group forbidden alcohol, but not given vitamins, did not. The work of Cowgill,

of Jolliffe and his co-workers, of Spies and Blankenhorn, of Wechsler and a host of others proved beyond any doubt that alcoholic "neuritis" is a deficiency syndrome, that pellagra neuropathy is due to privation of the vitamin B complex, and that treatments with specific vitamins led to prompt cures, provided the process had not become irreversible.

With the preparation of crystalline vitamin B_1 the treatment became specific, and the clinical results could be evaluated all the more accurately. Now that nicotinic acid, thiamin and riboflavin are available, one can not only bring about rapid cures, but one can tell which vitamin of the B complex is deficient in a given case. It has also become clear that many of the cases of peripheral neuritis hitherto regarded as due to inflammation or poisons were not at all inflammatory, but degenerative in nature and that the word neuritis is a misnomer. Wherefore has come the suggestion that peripheral neuropathy be substituted for those cases which are due to vitamin deficiency or to endogenous and exogenous poisons.

The treatment of peripheral neuritis, therefore, with vitamin B_1, or the B complex is specific in many cases. But it is not specific or even worthwhile in all of them. However, the pellagra and the beriberi neuropathy can yield quickly to therapy. In the former, not only thiamin but nicotinic should be given in large and adequate doses, and where treatment by mouth is not effective or sufficiently rapid, prompt hypodermic medication is indicated. The same is true of alcohol neuropathy. In alcoholic encephalopathy, that is acute delirium tremens and the more chronic alcohol psychosis, both the thiamin and the nicotinic acid are not only specific, but frequently life-saving. It must also be borne in mind, as Cowgill has shown, that the vitamin B requirement varies directly with the calorie intake and the body weight. That is, the higher the calorie intake, the greater the vitamin need. It must be seen to it, therefore, that at least five thousand units of vitamin B are given daily, parenterally if necessary, in addition to vitamin rich foodstuffs. And since the damage done by vitamin B privation is entirely reversible at the first, all treatment should be early, prompt and vigorous.

It has also become clear, as Jolliffe so well demonstrated, that ordinary and commonly regarded adequate diets may be deficient in vitamins. This is an important fact not only in treatment, but in the diagnosis of peripheral neuropathies of obscure origin; it is even more important in prevention. All persons who partake of alcohol to excess must eat vitamin B rich foods. Although diabetic neuropathy is only in part a vitamin deficiency, the fact is that diabetics are deprived of bread, cereals and other foods rich in vitamin B, and so it is well to add the pure vitamins to the diets. Since pregnancy polyneuritis is almost invariably preceded by intractable vomiting, the administration of vitamin B becomes an imperative need, both for prevention and for treatment. It may even be necessary, in order to prevent the peripheral nerve damage, not to mention the more serious Korsakoff psychosis, to terminate the pregnancy.

Because arsenic, when given by mouth, damages the gastro-intestinal mucosa, and the anorexia and diarrhea prevent the absorption of vitamins, however adequate they may be in the food, it is well to administer the vitamins parenterally in case peripheral nerve lesions develop. The same may be true of phosphorous and possibly of lead. In any case, individuals exposed to these poisons should be given large doses of vitamin B, again, both as preventives and as cures. The same should be done for patients who suffer from gall bladder and other disease, accompanied by gastro-intestinal disturbances, particularly anorexia, vomiting and diarrhea. Such individuals may develop polyneuritic syndromes. Certainly, cachexia polyneuritis is due to vitamin deficiency, and while the administration of vitamin B will not cure a cancer, it may prevent the occurrence of polyneuritis and relieve signs and symptoms should they arise.

The clinical and experimental evidence accumulated thus far applies only to the cases just considered. There is no evidence that vitamin deficiency plays a role in other forms of polyneuritis. The indiscriminate administration of vitamins in those cases amounts at best to a clinical hunch, which is not scientific medicine. There is no violent objection to their use, but such treatment interferes with accurate study and investigation and merely

arouses false hope, even when it does not interfere with more useful therapy. The administration of vitamins by intraspinal route, as has been advocated by an uncritical and ill-informed enthusiast, is not justified by present knowledge. Aside from the fact that that writer tried the injection in a great variety of cases which could not possibly have had a common vitamin deficiency factor, there is no evidence at present that the vitamins can get past the barrier between the cerebrospinal fluid and nerve tissue.

The treatment of neuralgias with vitamin B has received some little attention of late. Not knowing the etiology of so-called true neuralgia, one cannot say what value the vitamin can have. The few reports extant, though they cannot be doubted, are not sufficiently convincing. In the few instances in which the writer tried vitamin therapy in very large doses, especially in tic douloureux, the results were not encouraging. Considering the fact that trigeminal and other neuralgias can cease as spontaneously as they set in, evaluation of the therapeutic efficiency of medication is not always easy. However, while there is no scientific evidence for the treatment, there is no serious objection to it.

Parallel with the investigations of the effect of the privation of vitamins B_1 and the B complex, other investigators worked with A, C and D. It has been shown that the absence of any of the three, but especially that of A, can cause degeneration of the central nervous system. Mellanby and others have demonstrated degeneration in the white matter of the brain and the white columns of the spinal cord. They have also shown that certain poisons, for example ergot, will cause degeneration within the nervous system, provided there is at the same time vitamin deficiency. Another point is that the histopathology of certain degenerative diseases of the nervous system is entirely similar to that seen in proved cases of avitaminosis. In effect, the term degeneration is a pathological and not a clinical entity, and while reasoning by analogy very often is fallacious, there is sufficient basis for the assumption that some degenerative diseases of the nervous system may be due to avitaminosis. In any case, degeneration of the nervous system has been produced by vitamin A privation.

Based upon this, Mellanby and others have advised the use of vitamin A in the treatment of multiple sclerosis. A number of clinical reports have appeared, which seemingly show that administration of vitamin A has brought about improvement, if not cures. Considering that spontaneous remissions, which may be temporarily regarded as cures by the unwary, occur so frequently without treatment, it is difficult to say whether any treatment is effective. Unless one can show a large series of cases over a period of many years, one must hesitate to accept temporary results. None the less, in view of the utter helplessness of the patients, vitamin A concentrate may be given in large daily doses. Obviously, the treatment, to be evaluated at all, must be carried on over a very long period of months. The writer has used from 50,000 to 100,000 units by mouth per day, thus far with rather doubtful results. Sometimes, on meticulous investigation of the vitamin contents of the diets used by patients, one finds that there was a vitamin A deficiency, but even in those cases the results have not yet proved favorable. The fact is that to some neurologists it is becoming clear that multiple sclerosis is not one disease, but that it is a series of syndromes—possibly on the basis of varied etiology. However, even where allergy or inflammations are invoked as causes there is no harm in giving vitamins.

More recently Einarson and Ringsted of Copenhagen have shown that vitamin E privation causes degeneration of the nervous systems, in a manner simulating amyotrophic lateral sclerosis and even tabes. That is, there is lateral column or pyramidal degeneration and involvement of the anterior horns to simulate the first, and of the posterior columns to parallel the second. It has also been shown by Evans and others that absence of vitamin E will cause degeneration in mice of striated muscles. This naturally brings up the question of muscular dystrophy. In the animals the atrophy occurred in the young and so does dystrophy in the human. There is also some evidence that the sympathetic nervous system is first involved, thus robbing the muscles of trophic impulses and leading to their degeneration, before the central nervous system is affected. And it is true that in some cases of dystrophy there is in

addition to involvement of the muscular system also degeneration of the nervous system and sometimes of the endocrine system.

Evans and others have actually shown that the dystrophy can be prevented in animals by the administration of vitamin E, that is, the wheat germ oil, or by treatment with the crystalline alpha-tocopherol. Based upon this I began to use the synthetic tocopherols in amyotrophic lateral sclerosis. One patient seen early in the course of the disease, only after three months, has almost completely recovered. He had atrophy and fibrillations in the left hand, arm and shoulder, increased deep reflexes and signs of pyramidal tract disease on one side. He had been given vitamin B without effect. When the E was added, he showed rapid recovery, the loss of power which was marked disappeared and so did the fibrillations. Considering that there is no case on record in which recovery ever took place, the results are startling and, if confirmed, will be of great importance. Another patient who had bulbar involvement with marked fibrillations in the tongue and was confined to bed because of paresis of the legs, has begun to walk, and the atrophy and fibrillations of the tongue disappeared after treatment with the tocopherols. Three other patients with advanced forms of the disease have thus far failed to respond. It seems that when the disease is advanced the process is irreversible, and it is, therefore, advisable to institute treatment as early as possible. There is the possibility that the vitamin E privation, if that is the cause of amyotrophic lateral sclerosis, is the result of malabsorption, and it will be interesting to see what effect parenteral injection will have. Experiments are now being carried on along these lines.

About other degenerative diseases of the nervous system there is little one can say at the present time. It may well be that a vitamin deficiency factor exists in some of them, but we have no way of knowing. It is even possible that such degenerative diseases as are due to specific causes also have a vitamin deficiency factor. On this basis, for instance, vitamins are given in combined degeneration of pernicious anemia, even though liver therapy is the more important. However, until experimental and clinical observations make the administration of vitamins at least plausible, their indiscriminate use does not seem to be justified.

In summary, one may say that peripheral neuropathies, such as occur in pellagra and beriberi, are amenable to vitamin B therapy; that alcohol neuropathy and encephalopathy are essentially the result of vitamin privation and, therefore, demand vitamin treatment; that pregnancy and cachexia polyneuropathies are undoubtedly due to vitamin deficiency; that arsenic and diabetic peripheral nerve changes probably are; and that patients with so-called neuritis following gall bladder disease or chronic gastro-intestinal conditions with diarrhea and vomiting most likely present mild or severe vitamin privation.

Obviously, the vitamin B_1, the whole B complex, either by mouth or, when necessary, the thiamin and nicotinic acid by hypodermic should be given early and in adequate doses. The Cowgill calorie vitamin ratio should be borne in mind. Other forms of neuritis do not yield to vitamin therapy, and there is no evidence that they are the result of vitamin privation. Intraspinal injection of vitamin B is not justified. The treatment of neuralgias, especially trigeminal, with vitamins is in the experimental, if not speculative stage. The treatment of multiple sclerosis with vitamin A and other vitamins has yielded thus far no definite results, but there is no objection to it and it may even be encouraged. The use of vitamin E, that is the alpha-tocopherol, in amyotrophic lateral sclerosis has but just begun, is still experimental, although a few results have been startling, and no statement can as yet be made other than that the treatment is worth while. To obtain valuable clinical results in the vitamin treatment of the various neural conditions and to prevent errors and disappointments, honest observation and accurate correlation are necessary. Despite the natural temptation it is well to avoid the indiscriminate or wholesale use of some or all of the vitamins and to try so far as possible the specific administration of such vitamins as have been shown to be deficient in certain types of peripheral neuropathy and in degenerative diseases of the central nervous system.

Acroparesthesia
Numbness of the Extremities

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Paresthesia of the extremities is a frequent complaint in any group of patients and its significance may be extremely variable. At times, it presages some serious organic malady such as tumor of the spinal cord, subacute combined sclerosis, brachial neuritis, and so forth. At other times, it is considered to be of a functional nature and its importance is slight, although it may be exceedingly unpleasant and disturbing of the individual's equanimity.

Paresthesia attributable to organic disease should be recognized as a result of objective evidence on careful physical examination. Occasionally, it may be necessary to permit a period of time to elapse before a final diagnosis is possible. This is especially true of those organic diseases of the spinal cord in which paresthesia may appear weeks or months before paralysis, atrophy, anesthesia, or other organic changes develop. Paresthesia of so-called functional character is not diagnosed so easily and all too frequently its exact importance is not recognized. Paresthesia should not be considered of functional origin until all possibility of an organic basis has been excluded by both clinical and laboratory methods.

The symptom complex of acroparesthesia, which we wish to review in this study, is so characteristic that the diagnosis may be made with reasonable safety in the absence of any demonstrable organic disease. Briefly stated, the syndrome consists of spontaneous paresthesia of the extremities, for which there is no apparent organic basis. Accompanying the paresthesia are pain and minimal sensory and vasomotor changes of the affected parts. Paresthesia is provoked by activity and relieved by rest.

In the neurologic literature of the nineteenth century many references were made to so-called functional types of paresthesia, and these were finally grouped together under the general heading of vasomotor neurosis. Nothnagel[1] in 1866 reported typical cases of acroparesthesia, but did not employ this term. Putnam[2] in 1880 described the syndrome rather fully under the heading of paresthesias of the extremities. It remained for Schultze[3] in 1893 to coin the term, "acroparesthesia," and to describe this syndrome as we recognize it today. Since Schultze's contribution many excellent articles on acroparesthesia have appeared both in the European and American literature; among them may be listed articles by Cassirer,[4] Collins,[5] Lesem,[6] Goldberg,[7] Jelliffe,[8] Lehrmitte and Nemours,[9] Climenko and Bogan[10] and others. More recently, a review of the subject by Arbuse[11] has appeared. Wilson[12] employed the term, "acrodysthesia," to describe these types of paresthesia, but we see no need for the added term.

The symptom complex of acroparesthesia consists, in such types of paresthesia, as of numbness, tingling, formication, and so forth of one or more extremities. As noted by Déjerine,[13] the paresthesia may spread so that the shoulder, face and tongue are involved, but it is never limited to the distribution of a peripheral nerve. Paresthesia is most marked at night when it may wake the patient. It may occur in the early morning, or following various forms of activity. It may be accompanied by subjective swelling or stiffness. There may be local awkwardness or lack of dexterity. Pain, which may be described as pain or cramping, may be present and usually accompanies the paresthesia. The pain is not confined to any nerve distribution. The various types of paresthesia and pain may be relieved by elevating, depressing, rubbing or even beating the

part. Cassirer, as well as many others, included the sensory disturbances of hyperesthesia and hypesthesia; the sensory changes, however, are minimal. Cassirer also included vasomotor disturbances, such as cold and pallor. These were accepted by others, but again are usually minimal. The relationship of acroparesthesia to, or its existence as, a transitional form of Raynaud's disease is to be questioned. To these symptoms previously mentioned we wish to add provocation of the symptoms by finer motions and relief by avoidance of similar activity. In the diagnosis of acroparesthesia, all possible organic factors must be excluded and such a diagnosis cannot be accepted in the presence of such organic disease.

Acroparesthesia is characteristically chronic in its course, often lasting for years. Déjerine and Oppenheim[14] both stressed the occurrence of spontaneous recovery, and the former stressed the recurrence after years of remission.

The etiology of acroparesthesia is unknown. Many factors, endogenous, exogenous and psychic, have been suggested. The incidence has been estimated as 1 to 3 per cent of the admissions to a neurologic clinic. We are unable to clarify this figure, however.

Review of Material

The material for this review consists of twenty consecutive cases of acroparesthesia from the files of The Mayo Clinic in which examination had been performed in recent years. Eighteen of the patients were women and two were men. This incidence (10 per cent) of males is higher than that conceded by some authors, but considerably lower than the 31 per cent reported by Collins. It was possible to obtain follow-up data in seventeen of these twenty cases. The first striking feature is that 90 per cent of these patients entered the clinic with a chief complaint of paresthesia of the extremities. It is readily admitted that many patients who came to the clinic with severe and acute illness may have failed to give a history of a mild or even a severe form of acroparesthesia. It has been noted that a patient who has acroparesthesia and who has become resigned to that affliction will return to the clinic with an acute illness and make no mention of the acroparesthesia unless directly questioned about it. The patient can become so well adjusted to the disorder that he accepts it, without much complaint.

The age at onset in our twenty cases varied from the seventeenth to the fifty-fourth year, the average age being thirty-eight years. Seven of the patients were between seventeen to thirty-five years of age at the time of the onset. The duration of symptoms at the time of the first examination varied from nine months to forty-four years; the average duration was eleven years. At the time of the follow-up study, the average duration was fourteen years; the shortest, three years; and the longest, fifty years.

Various types of paresthesia of the hands were present in some form in all cases and of the feet in 40 per cent of the cases. Numbness and tingling were complained of most commonly, prickling was mentioned frequently and other subjective sensations were described least frequently. In only two cases was the paresthesia more marked in the feet than in the hands. Pain was present in thirteen instances, local tenderness in five, minor color changes in four and subjective tactile impairment in only a few. Subjective swelling and stiffness were present in about half of the cases. Minimal objective sensory loss was demonstrable on examination in only two instances. One patient gave a history of minimal objective swelling during the attacks, but there was no swelling at the time of the examination.

The symptoms of sixteen patients were provoked by activity of the part; fourteen patients had noted relief by avoidance of activity. Seven obtained relief in attacks by rubbing the part, and seven others, from swinging, depending or beating the part. Thirteen were awakened at night by paresthesia, pain, or both, and ten complained of early morning distress. Many knew that manual labor would cause exacerbations immediately, during the following night, early the next morning, or at all these times. Seventy-five per cent of the patients stated that finer motions produced the symptoms. These finer motions were varied. Many mentioned sewing, knitting and writing. Others were able to wash windows, play the piano, polish silver, husk corn, and scrub floors to only a

limited extent. A few were unable to support a newspaper or book for any prolonged period. Many women found great difficulty in combing their hair in the morning and some could not pick up the hair pins, being hindered by the paresthesia, stiffness, awkwardness and pain. Many patients found they could greatly reduce their symptoms by avoiding these various movements.

Acroparesthesia has been considered by some authors to be related to the natural or artificial menopause. In our series, artificial menopause had occurred in five cases. In three of these the onset of the paresthesia coincided with the date of the artificial menopause. In one case the onset of paresthesia occurred four years after the artificial menopause and in the remaining case eleven years before the artificial menopause. The natural menopause coincided with the onset of paresthesia within a limit of a period of twelve months in three cases. In four cases the onset of paresthesia was three to six years before the normal menopause and in six cases menstruation was still regular.

As far as we are able to determine from our study of the records of The Mayo Clinic and the answers to our follow-up letters from seventeen patients, there is no specific therapy for acroparesthesia. Various forms of therapy were tried with only slight success. The avoidance of excessive use of the affected limbs appears to have been the most helpful suggestion. Moist heat did appear to give some relief in two cases. In three cases there were short spontaneous remissions. In one case in which acroparesthesia had been present for three years, one free interval of six months had occurred. In a second case of twenty-three years' duration, one free interval of thirteen months had occurred, and in a third case of four years' duration, one free interval of seven months. In three other cases, recovery was reported to have occurred. In one it was spontaneous in the sixth year of the trouble, in another, the various types of paresthesia were relieved in the fifteenth year by diathermy and extraction of two teeth and, in the third, recovery which took place after twenty-three years of suffering was the result of alcohol sponges to the spine. Our records do not contain mention of any recurrence following a prolonged remission, but unfortunately our information is confined to so limited a group of cases that a positive statement on this point hardly seems justified.

As the history of these patients is so similar, we are giving an abstract of five typical cases.

Report of Cases

Case 1—The patient, a woman, thirty-four years of age, first had observed numbness in the hands and arms four years before our present study. The numbness was later accompanied by pain which by 1939 occurred every day. She described the numbness as "wooden hands" and the pain as a "bony ache." When the numbness was present, objects did not feel natural in her hands. She frequently noted numbness on awakening in the morning. Sewing, knitting, washing windows or driving a car provoked her symptoms. Attacks of numbness or pain from the finger tips to the elbows caused her to get up at night, to walk the floor and swing her arms. This activity relieved the pain, but not the numbness. At night she also has had some pain and numbness in the right leg and right third and fourth toes. She had a period of seven months of freedom which coincided with the period of building a home and total absence of house work. Beyond the acroparesthesia, she had no complaints. Menstruation was regular.

She replied to our follow-up letter in 1939 as follows: "I have very little numbness in my hands lately, as I have kept from doing the things that seem to make it worse. The other day I had occasion to do some hand mending and the numbness recurred almost at once. When I quit sewing, the numbness disappeared."

Case 2—A woman, seventy-seven years of age, has been seen at The Mayo Clinic repeatedly over a period of sixteen years for various ailments. At the age of twenty-seven years following unusually hard manual labor she noted a numbness and tingling in her arms, associated with a tendency for the fingers to go to sleep and lose their ability to feel things properly. She was forced to give up playing the piano. Early in her trouble she noted that her arms would go to sleep at night, and she gained relief by hanging her arms outside the bed. She replied to our follow-up letter as follows: "I think the numb-

ness is some better as I look back over fifty years. There are mornings that I do not notice it at all, then again I cannot use a needle to take just a few stitches without stopping and shaking my hand and arm vigorously for a few minutes. The feeling then comes back and I take a few more stitches."

Case 3—A woman, forty-two years of age, has had attacks of numbness and tingling in both hands, accompanied by pain and subjective stiffness and puffiness for a period of twenty-five years. The attacks were provoked by use of the hands, even by the carrying of packages. The symptoms were aggravated for two days after exercise or use of the hands. Her hands would go to sleep at night and wake her. Menstruation was regular.

This patient's symptoms are well described in her reply to our follow-up letter in 1939: "Through years of experience I have found that the only relief for my hands is not to use them. When away on trips, or vacations, when I do not sew or write or use my hands constantly, they rarely trouble me. I can't play the piano, or carry a package, or sew, or write that I do not suffer with my hands and have them get so stiff and numb that I have to constantly let them drop to my sides and wait until they feel fairly normal again. I can hardly fasten my clothes when I dress in the morning, but it is a feeling that passes quickly most of the time. I do not ever have to walk the floor with pain, as I have done, though at times I must admit it is most unpleasant. A life of leisure, no worry, no discord, seems to be the answer, but that can't be had short of Heaven."

Case 4—A woman, sixty-five years of age, dated the onset of paresthesia to coincide with other menopausal symptoms following artificial menopause at forty-seven years of age. She described the paresthesia as numbness, tingling, "a thousand needles," with some pain which occurred in the hands and in the arms to the elbows. Nine years after onset of paresthesia in the hands numbness appeared in the lower extremities from the toes to the knees, but especially in the knees. She was able to sew for short intervals only because sewing provoked the symptoms. The symptoms were most marked at night; in fact, she dreaded the coming of the night for she was often awakened several times. When this occurred, she would sit up, shake her hands and massage them vigorously. This would bring a return of feeling in fifteen to thirty minutes. Stiffness and subjective swelling of the fingers were present, which was so marked some mornings, that she was unable to comb her hair. She was definitely aware that rest gave relief and considered that the symptoms were slightly worse in the winter. In 1939 she reported: "I still have quite a bit of numbness in my hands—have been doctoring all the past winter for it."

Case 5—A woman, seventy-four years of age, gave a history of numbness, tingling and subjective impairment of tactile sensation of the fingers of both hands following artificial menopause at forty-seven years of age. She stated that paresthesia occurred on holding the hands in any position for a few minutes and she was forced to change their position every few minutes. Paresthesia was provoked by holding a book or fixing her hair, although when at rest in her lap, her hands were comfortable. Attacks lasted about ten minutes and were relieved by holding the hands down. The paresthesia was worse at night and in cold weather, and was generally progressive. The diagnosis of acroparesthesia, she stated, was the same as had been given previously on separate visits to two nationally known neurologists elsewhere.

In 1939 the patient reported that repeated treatments of light massage and applications of alcohol to the "spine" over a four-year period by a nonmedical practitioner had given relief, except that in cold weather she occasionally had a little numbness in the morning which was trifling and seemed to yield to treatment.

In the differential diagnosis of acroparesthesia it must be borne in mind that all the characteristics of the symptom complex may not be encountered in any individual case, but the majority of them will usually be present. Various functional disorders must be considered, such as erythromelalgia, Raynaud's disease, neurasthenia, and exhaustion syndromes. Among the organic diseases in which various types of paresthesias of the extremities are likely to be an early symptom are: tumor of the spinal cord, subacute combined sclerosis, disseminated sclerosis, tabes dorsalis, syringomyelia, scalenus anticus syn-

drome, cervical rib syndrome and the various forms of neuritis such as brachial plexus neuritis, diabetic neuritis, arteriosclerotic neuritis, and so forth. All of these conditions should be recognized or at least their presence suspected by complete physical examination.

Summary and Conclusions

Acroparesthesia should be looked on as a distinct ailment in which the chief characteristics are various types of paresthesia, pain and minimal sensory and vasomotor changes of the extremities. The upper extremities are affected more frequently and symptoms are usually provoked by activity and relieved by rest. The condition is relatively infrequent, but because of its benign character, it should be recognized and readily distinguished from the so-called functional types of paresthesia or the paresthesia associated with serious organic disease. The etiology of acroparesthesia is not known, but for the present, it must be considered under the general heading of a functional disorder. There is no specific therapy, but the malady can be ameliorated by the avoidance of strenuous activity and by local therapy. Although curing of acroparesthesia cannot be promised, it is possible to advise the sufferers that, although the affliction may be chronic and recurrent, it does not lead to progressive local changes and need not be disabling. It is interesting to note that the patient usually becomes reconciled to the various symptoms of acroparesthesia and learns to make a satisfactory adjustment.

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NEWSNOTES

NEW MENTAL INSTITUTION

According to *Hospital Topics and Buyer*, the New York State Department of Mental Hygiene plans to build a new hospital for mental patients at Deer Park, Long Island, New York. The department has recently acquired 875 acres there and it is understood that between $5,000,000 and $6,000,000 is available for the new institution.

MEETING REPORT

At the March 20th meeting of the Los Angeles Society of Neurology and Psychiatry, held at the Los Angeles County Medical Building, Dr. Charles W. Tidd spoke on the *Psychoanalytic Concept of Psychic Structure*, and Dr. A. J. Rosanoff, Director of Institutions, reported on *The Work of the Department of Institutions.*

The Treatment of Neurosyphilis in a Psychiatric Clinic

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Dr. Whitaker received his Doctorate of Medicine at Syracuse University in 1936. He has recently been appointed Assistant Physician at Brigham Hall Hospital. He is a candidate for the Master of Arts degree in psychology and an applicant for membership in the American Psychiatric Association and Fellowship Award by the National Committee of Mental Hygiene.

The three main functions of the outpatient clinic of a psychopathic hospital in regard to the problem of neurosyphilis are:

1. Prevention, classification and early diagnosis.
2. Preliminary and early treatment, including repeated careful examination and "individualization" of the patient.
3. Follow-up treatment.

Although the plan of treatment must vary with each patient, an organized program is of great value, particularly in larger clinics. A standardized routine is helpful in the majority of cases and serves as a basis for planning individual differences in the therapy.

I (a) Prevention

The first important factor is the prevention of neurosyphilis. The adequate, prolonged, intensive and uninterrupted treatment of systemic lues is essential.[1 2 3 4] Further, repeated examination of the patient is necessary, particularly in the vascular types of syphilis. This includes re-checking of the physical, mental and serologic estimates, even after the three year period of intensive treatment. Since a latent period is present before the tertiary manifestations appear, reliance should not be placed on laboratory findings alone. The evaluation of the total picture, including the history and progress of the patient, are of more value than the signs or symptoms at a given time.

In twenty-five per cent of our cases, neurosyphilis was either unsuspected or not seriously considered prior to admission to the clinic. This was largely due to the fact that a complete spinal fluid examination was not done or early suspicious mental, neurologic or serologic signs were disregarded. It must be borne in mind that in roughly thirty-five per cent of all cases of neurosyphilis the blood Wassermann may be negative. In vascular syphilis the possibility of neural involvement may be overlooked.

Prevention must be considered also in the light of avoiding the occurrence or recurrence of central nervous symptoms or regressive mental changes. We proceed on the principle that once a person has had syphilis he or she may develop tertiary symptoms regardless of the treatment. Therefore, repeated and periodic check-up is necessary.

A routine blood Wassermann is done on every patient attending the clinic. We believe a spinal fluid examination should be done in every case where the blood Wassermann is positive, or where there is a history of syphilis. If there are symptoms suspicious of neural, meningeal or mental involvement, or personality changes, even though they may not appear to be of syphilitic origin, a lumbar puncture is indicated.

In most cases, irrespective of the stage, a spinal fluid examination should be done after a positive blood Wassermann has been found. Where unforseen circumstances or complications, such as severe skin lesions, other acute manifestations, debility, or cardiac disease prevent the early examination of spinal fluid, a puncture should be done within six months after the treatment has been initiated. If the spinal fluid examination reveals no evidence of neurosyphilis, it is well to repeat the procedure within six months and yearly thereafter. At the end of the three year course of treatment it is wise to examine the spinal fluid before termination of the therapy.

In latent lues a spinal tap is done before

and shortly after treatment has begun and is repeated as outlined above. A lumbar puncture should be done at any time in the course of treatment when signs of neural, cerebral or meningeal involvement appear, and where treatment for systemic or neural syphilis has been neglected or has been intermittent or inadequate, or where a blood that was previously negative becomes positive.

(b) Classification

The types of neurosyphilis are roughly classified as those without psychosis and those with psychosis. More than 90 per cent of our cases fell in the latter group. Only cases of uncomplicated tabes, spinal lues, or vascular syphilis, had no psychosis. The cases may be further sub-divided into the more familiar groups, such as the meningo-encephalitic type (general paresis), the meningo-vascular type, and the tabetic or spinal type. In addition, we have noted mixed, atypical and congenital forms. The mixed forms include tabo-paresis, tabes with meningo-vascular signs, paresis with meningo-vascular manifestations and vascular syphilis with cerebral involvement. The atypical forms may resemble other syndromes such as multiple sclerosis, amyotrophic lateral sclerosis, combined lateral sclerosis, brain tumor (gummatous type), or more acute forms of meningeal or encephalitic involvement. In some cases, the disease may superficially appear to be latent. Of the latent forms, the rare syndrome of so-called asymptomatic neurosyphilis [4 5 6] is most often an early or ill-defined type of tabes, paresis, meningo-vascular or vascular lues. Lastly, neurosyphilis may complicate or be complicated by other organic diseases of the central nervous system, such as head trauma, arteriosclerosis or alcoholism.

Eighty per cent of our neurosyphilitic cases were paretics. The meningo-encephalitic type (general paresis), in our opinion, is always associated with a psychosis. Definite signs, mental symptoms or suspicious findings are always present. In more than 95 per cent of cases of meningo-vascular syphilis, evidence of a psychosis or neurological signs are present at some time during the course of the disease. However, these manifestations may at first be transitory. In most cases of uncomplicated tabes or vascular syphilis a psychosis is not present. However, the possibility of a tabetic developing a psychosis, usually of the taboparetic type, must constantly be kept in mind. Tabetics may develop a psychosis associated with situational and psychogenic superimpositions. Reactive depressions with tabes are frequently noted. However, a masked form of general paralysis, meningo or vascular-neurosyphilis, must always be considered in the presence of spinal or vascular syphilis.

Asymptomatic, or serologic neurosyphilis, is often only a sub-division of that group of latent syphilis where neurosyphilis may not be apparent at first by sign or symptom, but where careful study reveals its presence. Since the diagnosis of neurosyphilis is made by evaluating the total picture, including the spinal and blood findings, the diagnosis of asymptomatic neurosyphilis is occasionally due to inadequate or incomplete examination and evaluation. Wherever there is a suspicion of systemic syphilis, neural syphilis should be considered as a possibility. The routine practice of doing a spinal tap during the secondary stage of syphilis and in all forms of systemic syphilis is an important step in the elimination of the so-called asymptomatic neurosyphilis. The old axiom of considering the presence of syphilis, because of its protean manifestations, in any patient with ill-defined complaints is a good one. No doubt some of the cases of so-called asymptomatic neurosyphilis with positive spinal fluid findings have been discovered because a clinician has been conscious of this maxim and has examined the spinal fluid and the blood of a patient who came to him with some uncertain but persistent set of symptoms, or where ill-defined, fleeting, uncertain physical signs were present. Asymptomatic neurosyphilis may be found in early spinal syphilis or vascular syphilis with minimal cerebral involvement because of the absence of mental signs or inconclusive neurologic findings.

In our series, asymptomatic neurosyphilis did not occur in the meningo-encephalitic or meningo-vascular types since in these groups there are almost always some suggestive manifestations. While neurosyphilis may not be diagnosed on first examination, it can always be suspected, even though the signs are only

transitory. The personality changes are often the first indication of neurosyphilis with psychosis. Many of our cases that might have been called asymptomatic paresis after close study did show mental signs, such as personality changes, loss of ethical and moral sense, mild intellectual impairment, mild periods of confusion, slumping in occupational ability, or early neurologic signs.

(c) Early Diagnosis

The third important factor is alertness to the development of subjective or objective signs indicative, or suspicious of early neurosyphilis. Aids to diagnosis are:

1. Complete history including data as to time of exposure, occurence of initial and secondary lesions, or the presence of congenital syphilis. 2. Adequate mental and personality status with special reference to any changes noted. 3. Adequate physical and neurologic examinations. 4. Adequate serologic diagnosis including spinal fluid findings during or after the secondary stage. 5. Knowledge of the amount of treatment. 6. Recognition of complicating conditions such as alcohol, arteriosclerosis, or trauma, which may mask the clinical picture. 7. Evaluation of the total clinical picture and the factors mentioned under classification.

Including cases who have received adequate, inadequate, or no therapy for syphilis, the blood Wasserman was positive in 65 per cent of our cases. It was negative in 10 per cent of the meningo-vascular cases, 50 per cent of the tabetics and 15 per cent of the paretics. Because of the large number of paretics in our series, the spinal fluid Wasserman was negative in only 12 per cent of our cases. However, 50 per cent of the meningo-vascular type and 40 per cent of the tabetics had a negative spinal Wasserman in contrast to only 5 per cent of the paretics. Ninety-nine per cent of paretics had a positive spinal fluid, in that one or more of the following tests were indicative of syphilitic involvement: i.e., the Wasserman, Kahn or colloidal gold reactions, an increased globulin content or a cell count of more than 10 per cu. mm. In meningo-vascular syphilis, there is often an increased globulin and cell count. The characteristic paretic, tabetic and meningeal colloidal gold curves are confirmatory and indicative, but may be found in other neurologic conditions. Therefore, when these curves appear alone and in the absence of other findings, they are not conclusive evidence of neurosyphilis. However, since neurosyphilis should be suspected, repeated examination in the light of the total clinical picture is advisable.

A common type of experience in neurosyphilis is the situation where the clear-cut laboratory signs are absent, such as in "burned out" tabes. This may occur where the patient has received treatment for systemic lues, or where the serological findings are only suspicious and may be found in other neurologic conditions. The signs and symptoms of early general paresis, or meningo-vascular lues, or the atypical or mixed forms, at times cannot be differentiated from other neurologic conditions such as arteriosclerosis, multiple sclerosis, or Alzheimer's disease. The serology is, at times, of little aid, but the history, clinical and mental findings and the total picture are important.

The spinal fluid and blood Wasserman in some tabetics may be negative. However, one or the other is usually positive in a given case. The diagnosis may be difficult because of the absence of characteristic neurologic signs of tabes and the absence of mental signs, or the presence of subjective, ill-defined, early sphincter disturbances, paresthesias, or a questionable Rhomberg. In these cases, the provocative Wasserman, repeated serologic, neurologic and physical examination and further history are important. If the signs are indicative, one loses nothing and gains much in instituting a course of treatment. In this manner, one may prevent an early type from becoming active. Most of the rare cases of so-called asymptomatic neurosyphilis fall in the tabetic and vascular groups largely because of the relative absence of demonstrable cerebral involvement and the early absence of definite cord signs.

(II) Preliminary and Early Treatment

In neurosyphilis, where contraindications do not exist, malarial blood should be injected as soon as possible because it is much more effective in the early stages. Inoculations with malaria may be advisable in the secondary stages of lues, particularly if the

spinal fluid is positive. The Kettering hypertherm is used in some hospitals to produce hyperpyrexia.

In regard to the preliminary check-up and consideration of the patient prior to treatment, the following things must be borne in mind:

1. The physical status of the individual. Is he emaciated or well nourished? What type of treatment would best be suited to this individual?

2. The presence of complications such as aortic, cardiac, kidney and skin lesions; acute and chronic infection; head trauma, arteriosclerosis or alcohol.

3. The presence of idiosyncrasies or unfavorable reactions to the arsenicals or heavy metals.

4. Repeated neurological check-up.

5. Careful eye examination, including fundi, vision and visual fields, particularly if tryparsamide is to be administered.

6. The type of neurosyphilis. In the acute types of meningo-vascular syphilis or in the presence of hemorrhage one must be very cautious in proceeding with the treatment, as modifications are frequently necessary. Malaria and tryparsamide, at times, cannot be administered. Bismuth, mapharsen or neoarsphenamine alone may be tolerated.

The individualization of the patient is best brought about in the preliminary period when he is under observation. It is then that the various plans for modifications can be made. It is often necessary to re-check the blood Wasserman, spinal fluid and clinical findings in the dubious case. In those instances, where a question exists as to the diagnosis of neurosyphilis and where there are other complicating factors, it is always important to review the findings so that a patient who has syphilis, but may not have neurosyphilis, will not be subjected to the added continuous physical rigors of an anti-neurosyphilitic regime.

In cases of vascular syphilis it is often difficult to decide whether a patient has cerebral involvement. However, when there is doubt as to whether the patient has neurosyphilis or systemic lues, we favor suspecting the presence of central nervous system involvement.

An important aspect of the preliminary treatment is the preparation of the patient from a psychotherapeutic angle. In this period one must gain his confidence and educate him and his intimates to the necessity for treatment. The marital partner and the children, or the parents, in cases of suspected congenital syphilis, must be made to see the necessity of having their blood tested.

The patient is watched for his reaction to the early administration of the bismuth and the arsenicals which may to some extent determine the future treatment. The early treatment, as well as the later treatment, may vary somewhat with the type of neurosyphilis. In meningo-vascular syphilis and the atypical forms, arsenicals and bismuth may be given for a longer period preliminary to the injection of malaria. In most instances, it is advisable to administer a preliminary course of bismuth, or mercury and iodides, neosalvarsan, old salvarsan, tryparsamide or mapharsen prior to malaria. The two last mentioned drugs in particular are of tonic value in emaciated patients. Where debility or other contradictions to malaria exist, it is advisable to administer at least one full intensive course of bismuth and neoarsphenamine, or tryparsamide or mapharsen as a preliminary measure. We inject 1 c.c. of bismuth sub-salicylate intramuscularly twice a week for five weeks (10 doses) and .6 to .9 grams of neoarsphenamine intravenously twice weekly for six weeks (12 doses). It is preferable, when these drugs are first injected, to use ½ c.c. of bismuth and .15 to .3 gram of neosalvarsan. Under some conditions bismuth and neosalvarsan may be given once weekly.

(III) Follow-Up Treatment

(a) Chemotherapy

Subsequent to hyperpyrexia in the uncomplicated types of neurosyphilis, we employ the following procedure which is characteristically applicable to the average case of the meningo-encephalitic type (general paresis). About a week after the termination of fever treatment the patient receives neosalvarsan twice weekly for 3 weeks, followed by bismuth sub-salicylate twice weekly for five weeks. As in the preliminary treatment, it is best to start with ½ the dose of each drug. After these procedures, and following careful eye examination, tryparsamide is instituted.

The dosage of tryparsamide is usually three grams, given in 10 c.c. of sterile water. The patient is watched for subjective eye signs before, during and after the administration. He then receives tryparsamide weekly for twelve weeks. After the tryparsamide is terminated he receives twelve injections of bismuth and then tryparsamide again. There is no rest period during this treatment and the patient is treated in this way for three years. Repeated examination, including a spinal puncture, is necessary to determine the effect of treatment and to plan for future treatment. At times, this procedure may be varied so that the patient receives tryparsamide directly after malaria or after neosalvarsan, depending on individual preference. Mapharsen may be substituted in those cases where tryparsamide is contraindicated or poorly tolerated. In some instances, during the second year mapharsen or neoarsphenamine may be substituted for one course of tryparsamide.

Since our early attempt at standardization, approximately 75 per cent of our cases have had a complete continuous course of treatment. In 15 per cent the course was discontinuous or intermittent. In 10 per cent, the therapy was considered incomplete or inadequate. The failure of patients to receive a full course was due to the occurrence of complicating factors, the development of untoward reactions during the treatment, or the lack of cooperation on the part of the patient or family. Except where there are obvious contraindications to be considered, our present policy is to give a *full continuous* course for at least three years, in all forms of neurosyphilis, even though the spinal fluid Wasserman and blood Wasserman should prove negative at the end of the first or second year. We are more prone to judge the effect of the treatment on the basis of the clinical changes than on the laboratory tests. However, it is advisable that the patient have a spinal fluid check-up twice during the first year and every year thereafter for six years. In those cases where there is very little change in the serology it seems necessary to have a blood and spinal test every six months throughout the course. After the end of three years, if the patient shows little or no improvement, it may be necessary to give him a rest period and then the possibility of the re-administration of malaria must be considered. If he is clinically improved and serologically positive, i.e., Wasserman fast, the clinical improvement should take precedence, as our experience indicates that the correlation between the serological and clinical improvement is not very high. The occupational, social, ethical and personal life of the patient should also be studied and guided. In advanced cases of paresis, the treatment may have to be modified as in most of the meningo-vascular types.

The early case of meningo-vascular syphilis frequently responds strikingly to chemotherapy alone. Bismuth and tryparsamide in alternate courses are very effective. Mapharsen and the arsphenamines are also of value. Due to the fact that the patient may have a sub-acute meningeal involvement, cerebral thrombosis or cardiac disease, it is necessary to proceed with caution and in some to rely entirely on chemotherapy. The use of malaria and the routine procedure for general paresis must be deferred until the more acute symptoms have subsided. Wherever possible, if the patient's physical condition allows or has improved as a result of tonic measures or moderate chemotherapy, one should proceed in the same manner as in early paresis. This is advisable because of the possibility of paresis developing subsequent to inadequately treated meningo-vascular syphilis. At times the treatment may have to be prolonged for more than three years. Rest periods, followed by intermittent therapy, may be the procedure to which one resorts with little choice because of the above mentioned complications. Frequently, however, the meningo-vascular type offers the most favorable prognosis.

The treatment of tabes is very similar to that of general paresis. Hyperpyrexia and chemotherapy are effective in the earlier cases and in early gastric crises, but are of little value later. It is most important in tabes to be on the lookout for early and evanescent signs because once the cord proper is definitely involved the lesion can only be arrested and treatment obviously does not affect the signs already present. It is important to prevent the progress into tabo-paresis and every case of tabes must be carefully observed for appearance of mental signs. The question of cerebral or meningeal involvement in tabes

has not been given sufficient consideration in the past. Gastric crises are at times temporarily benefitted by amphetamine sulfate.

In the presence of a mildly positive Wasserman or mildly positive spinal fluid, where the patient complains of subjective discomforts; or feelings of malaise and dizziness, unsteadiness; or where there is early incoordination, loss of position sense; where one or both knee jerks begin to diminish; where early eye signs are detectable, such as unequal or fixed pupils, early Argyll-Robertson pupils or loss of consensual reflex, anti-neurosyphilitic treatment should be administered immediately and intensively—before the full blown signs of tabes appear. Once bowel and bladder incontinence have been definitely established, the treatment is unsatisfactory. Frequently, however, an ill-defined or transitory difficulty in sphincter control may be a sign of early tabes.

In general, therefore, early neurosyphilis, of whatever type, receives the same intensive treatment as the more fully developed types of paresis. In cases of tabes, where a psychosis apparently does not exist, the development of mental signs must be watched for carefully. Meningo-vascular or vascular lues is frequently complicated by an arteriosclerotic picture and it is at times impossible to decide, as far as mental signs or even pathological findings, as to which is the predominant etiological factor—arteriosclerosis or luetic arteriosclerosis. As mentioned under prevention, latent lues (particularly in the presence of positive blood and absence of spinal fluid findings) should be treated intensively in the same manner as a secondary lues, to forestall the occurrence of neurosyphilis. Treatment with hyperpyrexia or the inoculation of malaria, which is a hospital procedure, does not fall into the province of this discussion. Suffice it to say that in some cases malaria must be activated by typhoid in resistive cases.

The follow-up treatment of congenital neurosyphilis proceeds along the same lines. However, the prognosis is frequently rather poor.

Drugs administered—Bismuth sub-salicylate, 2 grains in 1 c.c. suspension of oil, given intramuscularly is an effective adjunct in the treatment of neurosyphilis when given intensively in connection with neosalvarsan, tryparsamide or mapharsen.

Intramuscular injections of mercury may be substituted in the treatment, when bismuth is considered ineffectual, or as an alternative measure. Mercury alternating with iodides may be administered when the other procedures cannot be carried out. The dosage of the oil suspension of mercury salicylate, the drug of choice for intramuscular injections, is .06 gram once weekly for 10 weeks. Mercury succinimide (.01G) is used occasionally. At times, mercury must be given orally or by inunction. This is particularly true where the patient develops a reaction to intramuscular injections of either bismuth or mercury. The drugs used in oral administration are mercuric chloride (gr. 1/15) given three times daily, or mercury with chalk (hydrargyrun cum creta) 2-4 gr., three times daily. This latter contains 38 per cent of metallic mercury. By inunction 4 G. of the 50 per cent mercurial ointment daily, or 30 G. once a week is rubbed into the more hairless portions of the body for 30 minutes. The milder 30 per cent ointment is occasionally used.

Some do not consider that neoarsphenamine[7] is affective in the treatment of neurosyphilis and prefer arsphenamine. However, we feel that neosalvarsan is of value in the treatment of neurosyphilis under the following conditions: 1. As an alternate to tryparsamide. 2. After the three year period has elapsed. 3. In the early stages of treatment. 4. After malaria. 5. Where tryparsamide is contraindicated. It is not necessary to discontinue it as often as, and it is safer than, salvarsen. Varying of the arsenicals seems to have a synergistic effect in the treatment of neurosyphilis.

Recently, mapharsan has proven of great value, because it is less toxic than tryparsamide and more effective than neoarsphenamine. It can be used as a substitute for tryparsamide, particularly where the latter is contraindicated. In many cases, where debility, tuberculosis, cardiovascular disease, nephritis, hepatitis are present, or where the patient tolerates the other arsenicals poorly, mapharsen may be administered with relative safety. It may be used alternately with tryparsamide or neosalvarsan. It is now being

substituted for the latter with increasing frequency.

The usual single dose of mapharsen for the average adult male is .06 gram; for the female .04 gram. The full dose should never be given to any patient in the first injection. Initial doses are usually one-half the average dose. This drug must be administered rapidly by the intravenous route to prevent venospasm or venalgia, due to the rapid diffusion of mapharsen through the vessel wall. One course consists of 10 to 12 injections, given once or twice weekly.

The use of tryparsamide is limited entirely to neurosyphilis. It is particularly useful in paresis. The initial dosage is 2 gms. and the average dose 3 gm. The drug is administered intravenously. The use of hyperpyrexia in conjunction with tryparsamide has proven superior to other forms of treatment of central nervous system lues. Tryparsamide is usually given after malaria. Where malaria cannot be given, or is contraindicated, as in the very weak, aged and obese, or in those suffering from chronic somatic disease, tryparsamide is further indicated. In some cases, it is given prior to malaria, because of its tonic effect.

While one should proceed cautiously in debilitated states or cardiac conditions, and in acute meningo-vascular syphilis, the most definite contraindications center about idiosyncrasies and eye involvement. The ophthalmologist should always be consulted prior to and during the course of treatment. If the vision and eye grounds are normal and the visual fields have been examined by the ophthalmologist before treatment, the occurrence of ocular complications is lessened. However, the drug is discontinued when the patient experiences subjective eye symptoms, such as blurring of vision. It must be permently discontinued if objective signs of visual field defects or optic atrophy occur. If subjective complaints alone appear, administration of one-half the dosage may be resumed after a three to six month period. This, however, should be done only after consultation with the ophthalmologist, with particular reference to the visual fields. If tryparsamide is continued, the dosage should be increased to normal as soon as possible because there is some evidence to indicate that smaller doses may prove harmful. Careful check-up after the first dose and before the tenth is necessary, even in those cases that do not present any subjective signs.

During the past several years there has been some controversy[8] as to whether the tryparsamide aggravates a pre-existing optic atrophy or whether it is in itself a neurotrophic agent. We pursue the safer course and discontinue the drug when subjective eye signs appear. A few of our cases seemed to develop optic atrophy during the course of the treatment and the drug was permanently discontinued, because we felt that tryparsamide might cause eye involvement in some individuals allergic to it.

The use of iodides is empirical. They are used sometimes in the course of the fore or after treatment, or as a substitute measure. In patients who cannot take other forms of therapy; in cases with idiosyncrasies, where rest periods are indicated; or subsequent to mercury, iodides may be used even though their value cannot be definitely established. The dosage is 15 grains of potassium iodide three times daily.

Untoward Acute Reactions—Moderate transitory discomfort, sometimes of psychogenic origin, is frequently encountered. Mild toxic reactions are experienced by most patients during the course of the treatment. These symptoms soon disappear and are not alarming if the treatment is carefully administered and the patient watched. When the more serious manifestations appear, such as the Herxheimer reaction or collapse, sodium thiosulphate is immediately administered. Amphetamine sulfate is also of some value. Some of the toxic effects may be due to idiosyncrasy, or to the cumulative effect of repeated intensive treatment. Approximately ten per cent of our patients develop moderately serious reactions.

Untoward Chronic Reactions—Peripheral neuritis which may persist, when the patient is not carefully examined during the course of therapy, is rarely alarming or prolonged under favorable conditions of observation. Gastric crises appear to be reactivated at times. Myelitis, encephalomyelitis and cerebral hemorrhages, due to the arsenicals, have been encountered. The differential diagnosis

between these conditions and neurosyphilis is sometimes difficult.

Hepatitis and jaundice; gastro-intestinal symptoms, including abdominal cramps; anemias; debility; nephritis; mild confusions and dermatitis exfoliata; and other skin lesions are not infrequently encountered. Cardiac complications or manifestations may occur and are usually associated with pre-existant heart or aortic lesions. A debilitated patient may become weaker following intensive therapy. Cardiac or vascular collapse is usually an acute manifestation due to idiosyncrasy or improper administration, but may occur after repeated dosage, particularly in the presence of a disordered cardio-vascular system. The various chronic systemic complications offer obstacles to intensive therapy.

Most of the untoward reactions mentioned above, except the acute vascular or cerebral symptoms, are not very alarming if the patient is carefully watched, as the symptoms usually disappear a short time after the drugs are discontinued. Sodium thiosulphate, vitamins and the procedures aiding elimination are used in the treatment of the acute complications and in many of the chronic reactions. The more serious sequalae are reduced to a minimum if the drugs are carefully prepared and administered and if the patient is thoroughly examined prior, during and subsequent to the therapy.

However, in the presence of toxic reactions ascribed to chemo-therapy and in the debilitated cases and those with other complicattions, it is necessary to modify the therapy. An intermittent course of treatment including shorter or more prolonged periods of rest must be planned, depending on the individual case. Diminished dosage is frequently advisable. In some cases, usually following serious reactions or debilitated states, iodides alone may be given and all other procedures discontinued. This is particularly true in the presence of severe cardiac, nephritic or cerebral sequalae. In certain individuals, who do not tolerate the usual chemotherapeutic routes of administration well, it may be necessary to give courses of mercury by inunction, or orally, alternating with iodides. In cases with cardiac or other more severe complications it may be necessary to rely solely on iodides or bismuth and mercury. Lately, mapharsen has proven of distinct value in these cases as well as in those accompanied by a debilitating state or optic atrophy.

Follow-Up Treatment

(b) Psychotherapeutic Considerations

The previous personality to some extent affects the course and prognosis. In those whose personality is well integrated the prognosis is better. Complications, such as alcohol or head trauma, are unfavorable factors in the prognosis.

The question of the psychiatric approach to the patients is important. It must be explained that they are in need of at least a three year course of treatment, but, on the other hand, they must not be coddled into invalidism or scared by the thought of prolonged therapy. The patient must be prevented from developing a feeling of inferiority because of his condition and treatment. However, the need for regularity and full cooperation must be explained to him. It cannot be said literally that syphilophobia can develop in a person who has syphilis. However, symptoms similar to syphilophobia may result if the patient is not cautiously handled. Superimposed psychoneuroses and situational psychoses have been encountered in the spinal types of neurosyphilis, as well as in systemic lues. These must be differentiated from the mental signs due to neurosyphilis.

The social, familial and occupational aspects must receive attention. The patient and the family must be prepared for changes in adaptation, the relieving of stress and strain and other readjustments. A number of patients may improve sufficiently to engage in their previous occupations. However, in paresis particularly, one should prepare the patient for possible changes of occupation. This is especially true where hazardous or highly technical or skilled work is involved. In the case of chauffeurs and locomotive engineers, for instance, it is wise to err on the side of safety and recommend a change of occupation. Careful repeated check-up of the mental and neurologic status is necessary so that the physician may know what to expect of the patient and to aid in planning the patient's future.

Summary

The main functions of a psychiatric clinic in the treatment of neurosyphilis are mentioned.

A discussion of the prevention, classification, early diagnosis and chemotherapy prior to and subsequent to hyperpyrexia, as well as some psychotherapeutic aspects, is presented.

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Prevention of Recurrences in Manic-Depressive Psychosis

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Recently a man called to see me about his wife who had just passed through her fourth manic-depressive attack. He came a long distance to obtain information which he considered of fundamental importance to the welfare of his wife and family. What he sought was some advice and assistance to prevent further recurrences of his wife's illness. In view of the man's intelligent approach to the subject, and the very logical assumption which he expressed that the medical profession should be able to come to his aid, I felt rather embarrassed because I did not have more factual material upon which I could base my advice. I was conscious, also, that there is very little in medical literature on this subject.

The patient in this particular instance had at one time been under my care, so that I possessed what I considered a very good knowledge of her mental and physical make-up. I also knew the clinical details of one attack, and I had a very good history of the inception of the others. There were no events in the emotional life of the individual that could be looked upon as precipitating causes. It was important to note, however, that the patient's temperament had probably been greatly influenced during developmental years by a mother who had a very domineering disposition. The suggestion had been put forward that the presence of the mother on visits to the patient's home had been a disturbing element in bringing on one or two of the attacks, but this could not be definitely proven.

The husband proceeded to relate an occurrence a year earlier, which he believed had resulted in aborting an attack. The patient seemed to have a propensity to develop manic attacks towards the end of the year, as though they were in some manner related to the preparation for the holiday season. The husband at first stated that there was very little to be discerned in the nature of prodromal symptoms, but he did recall that the year before, during the late autumn, the patient became very restless and talkative and of

her own accord suggested that she separate from the family and go to a quiet watering place or hot springs and take the baths. She went to a resort near her home, where she was able to remain in almost complete seclusion because there were very few guests at that particular season of the year. At the end of one week she returned home, but upon arrival said she did not feel quite up to things, so she and her husband agreed that she should return for further rest. She did so, remaining for another week, then returned home, claiming that she felt very well, and the husband noticed that the patient was calm and tranquil.

This experience made quite an impression upon the husband; evidently they had by accident discovered a method that presumably aborted an attack. After some further discussion of the subject, the husband was able to recall that he could recognize quite a number of prodromal symptoms for a week or two before the real manic excitement ensued. These consisted of pronounced euphoria, increased talkativeness, which was also noticed by the children of the family, a pressure of activity, and ultimately a continuous flow of talk leading gradually to the state of delirious manic excitement. The husband has become somewhat educated in the observation of symptoms and, therefore, can detect changes in his wife that otherwise would not be noticed or that might not be apparent to other people. The best advice I could give to the gentleman, then, was to continue along the lines already learned, which was to watch for the warning signals just described and take appropriate action. The important thing seemed to be that the patient could be induced, while still in a mood receptive to suggestion, to go away for rest and quiet, rather than proceed on a trip that would entail emotional excitement and contact with a large number of people.

This is only one case exemplifying a problem that is presented many times to all practising psychiatrists—the prevention of recurrences in manic-depressive psychosis. The possibility of recurrence is mentioned during the patient's illness by members of the family with the statement that even if the patient recovers he is destined to have future attacks. There is a widespread belief that recurrences are predetermined and, therefore, the patient has no escape. It is interesting to note that most of the medical students who come to our institution for a period of residence and study during the summer, express the belief that manic-depressive psychosis is hopeless because future attacks are almost certain to appear. The writer is strongly opposed to this viewpoint on the part of the profession because it has a disheartening influence upon all of our therapeutic efforts, as well as fostering in the mind of the public the idea of recurrence with its depressing effect upon the patient and relatives. The possibility of return of the illness should be stressed only enough to enlist the cooperation of the patient and the relatives in the physician's campaign to prevent recurrences.

The statistical evidence should be of considerable importance. Kraeplin's textbook on psychiatry makes the statement that fifty per cent have only one attack. This fact should be borne in mind, as it gives us a good talking point to our patients and their relatives. It means that the patient is not necessarily doomed to cyclic return of these episodes. The United States Census tables show that for every two new admissions there is one re-admission in the manic-depressive group. This is a very large percentage, practically confirming Kraeplin's figures. If we can by some course of procedure prevent recurrences, we would not only bring help and comfort to the patient and the family, but we would go a long way toward making an impression upon the total incidence of mental cases and the load that is thereby placed upon our psychiatric institutions. If we could entirely prevent recurrences, the number of manic-depressives admitted would be diminished by fifty per cent.

We should profit by a review of the resources at our command, which I would like to analyze under the following headings: 1. Severity of Attack. 2. Convalescence. 3. After-Care. 4. Re-education of the Individual Patient. 5. Physical Health of the Patient.

Severity of Attack

I have a feeling, not based upon statistics, but upon seeing many cases of this type throughout the years, that the severity of the attack may have something to do with the possibility of recurrences. The expression

severity would mean the intensity of the symptoms and the duration of the illness. It is only logical to believe that mental aberrations and distorted mental processes, continuing or repeated day after day over a long period of time, produce a certain amount of habit formation, or develop what might be called a conditioned reflex. The same thing might happen in the sphere of emotional activity. It would be axiomatic, then, to say that our first requirement would be to do everything possible to reduce the length of the attack and the intensity of the symptoms. The proper treatment in most cases would be unquestionably institutional, where the necessary facilities were available for methods of treatment now in vogue. Those who have taken care of patients with states of delirious excitement or profound depression realize how important it is to obtain isolation from their environment, friends and relatives.

Convalescence

A proper period of convalescence after the acute symptoms have subsided is necessary to permit the patient to regain as much stability as possible before meeting the stresses and strains of normal life. It is often noticed in manic patients that after the disappearance of the principal symptoms the patient may drop to a normal emotional and psychic level, only to have a return of the symptoms as soon as he is exposed to increased activities. Also, the possibility should be borne in mind of a swing into the opposite phase, that is, of mild depression, which natural tendency may be accentuated in the midst of unfavorable circumstances.

The wise course of procedure, then, would be to retain the patient in a protected environment for many weeks, until recovery has been well established and until new patterns of activity have been formed, and thereby avoid the possibility of immediate relapse. The difficulty in most cases is to overcome the eagerness of the patient to again resume normal life, and the expense of continued care, if the patient is in a private institution. This is made somewhat easier in the public hospitals, but there, also, we find that pressure is placed upon the staff by the family and the urgent desire of the patient to be released. I think that a very positive stand should be taken by the physician in command of situations of this kind; and if this attitude is taken, much may be done to exert proper control, particularly if decisions are made in conjunction with the family physician. It is no easy matter to maintain control and a position of leadership at this stage of the patient's illness, in the face of a condition that is devoid of urgent or troublesome symptoms. A patient who is ambulatory, able to get out and engage in normal pursuits, is not easily kept in an institution for a protracted period of convalescence.

The family can be disarmed of all suspicion regarding ulterior motives, if the family physician is consulted and helps make a decision as to the time that discharge or parole can be permitted. It can be pointed out to the patient and the family that manic-depressive psychosis, either the depression or the manic phase, is a very severe illness. The manic phase particularly produces a complete disorganization of mental functioning, tantamount to a toxic delirium for the period of the illness. Time, therefore, is essential to bring about a proper readjustment of the delicate, complex mechanisms of the mind, and this can only be done advantageously through a rest regime under the guidance of a physician. Again it should be repeated that if a patient resumes normal activity before mental and emotional stability returns, he is working under a handicap that sooner or later is bound to bring about a relapse.

After-Care

We should not lose touch with the patient even after discharge or parole from the institution. Proper after care is just as important as the period of convalescence. At our institution we have tried for a long time to impress upon each patient and upon the family that leaving the hospital is only done on trial and that regular follow-up interviews must be followed out. These are advised at first semimonthly, then later, the frequency of the visits is decreased. These visits can be made either to the institution or to the local psychiatrist, who originally had the patient in charge; or, if these are not available, then to the family physician. In order that the latter may do this work intelligently he should

have a copy of the patient's examination from the institution, follow-up reports during the patient's illness, and some suggestions on the patient's return home. The family physician often remonstrates that he has no training along this line and, therefore, cannot be of any use, that if the patient needs any help he must return to the psychiatrist. This difficulty, however, should be overcome.

The family physician, with the confidence of the patient and the family already established, is particularly well qualified to exert a beneficial psychic influence. The mere visit of the patient to the physician's office may have the psychological effect of giving a feeling of safety and security. The ordinary physician is very adept at the detection of physical difficulties, so if some attention is given to that side of the patient's health, it always creates a good impression. The physician can also be on the look-out for symptoms indicating an oncoming attack, such as depression or increased mental excitability. If these appear, then definite steps should be taken, possibly in consultation with a psychiatrist.

Re-education

It is often stated by relatives, and even by physicians, that because a certain psychosis arose in a particular situation, the patient should not be returned to the former condition of life. This formula imposes an impossible task upon the psychiatrist, the patient, and the family, and hence it should not be the rule and guide of our actions. In most instances, when we carefully study the situation, the patient must return to the old conditions and the old environment. Certainly there is in most cases the same family, the same group of friends, and usually the same business and social conditions. It seems to me there are two things to do: (1) Exert every effort to bring about a re-education of the patient's personality so that he will have more strength to cope with life situations and meet with fortitude those failures which are bound to occur; and (2) guide and direct the patient's life and activities as much as we can along a path, which will be as free as possible from over-strain. These two procedures can best be carried out by the psychiatrist, but, of course, the family physician can give much help.

The re-education of the patient may seem to be a very formidable task, but it offers a challenge to the psychiatrist that is really the essence of our endeavors in the prevention of this psychosis. The location and the events of life of an individual may not be much influenced, but something can be done in regard to the manner of living. We must recognize the tempo of life and estimate by our clinical judgment the amount that our particular patient can best endure. In the realm of the emotions, there is always the intensity of feeling that demands control, and there is desired also the acquisition of a habit of repose, if the individual is to function with the least strain upon the mental organization. The statement is often made by patients that they are too old to change, that certain habits of action or thought have been permanently established and any effort to modify them would be futile. I do not believe this to be true, and I am certain that I have seen many cases where the desired results have been accomplished. They can only be brought about by a conscious effort on the part of the patient, under the direction of the psychiatrist, and eventually after weeks and months the conscious effort is replaced by more or less automatic control. The intelligent patient will cooperate nicely with general instructions, but other types may require a program outlined in detail, with sufficient commands and warnings of the dangers to ensue if it is not strictly followed.

The second point, that is, the guidance of the patient's life and activities, is largely a matter of plain common sense, although the patient or the family may not be aware of the debilitating influence of certain activities which seem to them a pleasure. It should be pointed out that the gratification of the pleasure principle is not always furthering the best of health. We all know the zest with which the manic patient enjoys continuous and mounting activity, and, as we often say, he loves the intoxication of movement. We must endeavor, therefore, to keep such patients out of occupations that keep them in a state of high pressure activity or in an atmosphere charged with emotional tension. We may encounter a situation in life that

is disadvantageous to the patient because of domestic complications. Here we believe we are confronted with something that is outside the physician's province and our only endeavor should be to improve the patient's personality so that the difficult problem may be handled in the best way possible. We cannot demand separation, nor can we rightfully recommend divorce.

Physical Factors

These naturally should be checked carefully, and the patient will expect this of the physician. Everything that can be done to prevent physical illness will, naturally, remove factors that could be precipitating causes of another attack. Also, it should be remembered that with the passage of time new pathology may develop which has no particular relation to the psychosis. It is always embarrassing to the psychiatrist to have some such pathology develop after the patient has been carried through a long manic attack, only to have the family feel, after this pathology has been discovered, that it was the cause of the patient's psychosis from the very beginning. We have had the experience of having an ovarian cyst, or uterine fibroma, develop during a convalescence, and have this looked upon by the family, or the patient, as the specific cause of the mental condition. Another point worthy of mention is the element of fatigue, as this is probably the basis for the manic attack in many instances; naturally, a debilitating physical illness could readily bring about an exhaustion state and lay the ground work for another psychotic attack.

Conclusions

The necessity for a study of recurrences in the manic-depressive psychoses and for methods which we can use to prevent them, is important alike to psychiatrists and family physicians. The great numerical mass of these cases produces a tremendous load on our hospital facilities and tax-supported institutions, so any measures to reduce this burden would be very much in the interests of human and public welfare. We may study the social, biological, and pathological factors producing manic-depressive psychosis to the end that some worthwhile prophylactic procedure may be discovered, but it is equally important to study each individual case in order that the number of attacks in the life history of the individual may be diminished. This field has only been slightly investigated, and the suggestions in this paper are given not only for the sake of information, but to stimulate others to formulate other methods and procedures that will assist in preventing recurrences in the manic-depressive psychoses.

Livermore Sanitarium

NEWSNOTES

WHAT IT COSTS

Since the Fall of 1935, the State of Ohio and a few of its counties have spent about $4,250,000 for the care of mental patients in private detention hospitals.

DR. FAY TO SPEAK ON CLINICAL SYMPOSIUM

Dr. Temple S. Fay of Philadelphia will speak on *Observations on Human Refrigeration* at the University of Buffalo School of Medicine's Sixth Annual Clinical Day to be held on April 20, 1940.

ELECTION TO OFFICE

On Thursday, February 15th, the New Orleans Society of Neurology and Psychiatry had its annual election. Dr. Charles Holbrook was elected President, and Dr. Lewis Golden was re-elected Secretary-Treasurer.

APPOINTMENT

Dr. Howard W. Potter has been appointed Clinical Professor in the Department of Neurology and Psychiatry of the Long Island College of Medicine.

NEUROLOGICAL SURGERY (Continued from Page 100)

matic shock, there arose the true specialty of Neurosurgery, with rapidly falling mortality in brain tumors, cerebellar tumors, brain abscesses, head trauma and cord lesions, so that in the properly equipped and highly specialized neurosurgical centers the results became excellent and the risks for even the major problems less than 20 per cent. In trigeminal neuralgia, for instance, the mortality is now less than 1 per cent. Compare this with the mortality on the Continent even ten years ago where 60, 70 and 80 per cent was to be expected in tumors of the brain. Neurosurgery in the United States leads the world not only as to technical advance but diagnostic measures and safety to the patient. During the past ten years, men have come from all parts of the world to visit the American clinics and to take back some of the progressive work that continues to go on in an ever widening scope. The Neurosurgeon today offers solutions for many difficult problems. He has made safe lumbar puncture, established encephalography and ventriculography within the realms of proper diagnostic procedures without undue risk. The neurosurgeon is able to save sight, reduce intra-cranial pressure and correct spastic and convulsive states. Many difficult, organic neurological problems find relief. Pain can be solved, brain tumors and tumors of the cord are far more hopeful, particularly if the neurosurgeon is given the opportunity of seeing the patient before terminal states arise or before final degenerative changes have induced irrevocable paralytic or nervous system changes. The neurosurgeon today is not only a well trained surgeon but he is a highly trained organic neurologist. His place in the community is an important one, particularly when a cerebral crisis or trauma has jeopardized the life of the individual. Where in 1890 there was but one clinic in this country which was known for its special interest in Neurosurgery, there are more than 35 clinics today well equipped with well trained men who devote their entire time to neurosurgical problems, and there are many young men excellently trained who have already made names for themselves and are rapidly establishing their usefulness to the community which they serve. Neurosurgery as a specialty today requires that a physician devote at least six years to this special work, three of which must be training received in a recognized neurosurgical clinic, before being considered qualified to engage in the field of Neurosurgery.

TEMPLE FAY, M. D.
Philadelphia, Pennsylvania

NEWSNOTES

STATE OF ILLINOIS NEEDS PHYSICIANS

There are vacancies on the medical staffs of the state hospitals for the insane and feebleminded under the jurisdiction of the state department of public welfare. Physicians enter the service in the classification of junior physician. Requirements include legal residence in Illinois, citizenship in the United States, graduation from a class A medical school and a license to practice medicine in the state. The salary for junior psysician is $150 each month with full maintenance for self and family. If no civil service examination is pending, the applicant may be appointed and will be required to take the next examination for the position which is scheduled by the state civil service commission.

Advancement to the higher classifications of senior physician, clinical director, and assistant managing officer is provided through promotional examination. The salary range for senior physician is from $195 to $210 a month. For clinical director, the salary range is from $250 to $300 a month. Assistant managing officers in institutions with a population of less than 2,500 patients receive from $218.33 to $243.33 a month, and in institutions with more than 2,500 patients, from $243.33 to $268.33 a month. Maintenance for self and family is provided in all these positions.

Opportunities for graduate training in psychiatry while employed in the state service have been provided and will be augmented when the additional wards and research fa-

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GLENN MYERS, M.D.,
Medical Director.

cilities in the new psychiatric institute are made available in the near future.

Some residencies in psychiatry are also available in the state hospitals for the insane. The salary is $52.50 a month with maintenance for self only.

Applicants should communicate with Mr. A. L. Bowen, Director, State Department of Public Welfare, Springfield, Illinois, for further information. J. A. M. A.

DR. BAILEY GIVES MEMORIAL LECTURE

Dr. Percival Bailey, Professor of Neurology and Neurosurgery of the University of Illinois College of Medicine in Chicago gave the Sixth Annual E. Bates Block Memorial Lecture before the Fulton County Medical Society of Atlanta, Georgia on March 18, 1940. The subject of his address was *Indications for Operations on Cases of Brain Tumor*.

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